



LEHIGH COUNTY AUTHORITY

Policy And Procedures Manual

For

Backflow Prevention/Cross-Connection Control

Protection of the Public Water Supply System

By Containment

May 1992

TABLE OF CONTENTS

	<u>PAGE NO.</u>
I. DEFINITIONS	2
II. STATEMENT OF POLICY	4
III. RESPONSIBILITIES	
A. Lehigh County Authority	4
B. Owner	5
C. Certified Tester	5
IV. SPECIFICATIONS AND APPROVAL FOR BACKFLOW PREVENTION ASSEMBLIES	6
V. EXISTING BACKFLOW PREVENTION ASSEMBLIES	6
VI. AUXILIARY WATER SOURCES	7
VII. LOCATION AND INSTALLATION OF ASSEMBLIES	7
A. General Conditions	7
B. Domestic Service Lines	8
C. Private Fire Protection Service Lines	8
VIII. THERMAL EXPANSION	8
IX. TYPES OF BACKFLOW PREVENTION ASSEMBLIES REQUIRED	9
APPENDIX:	
A. Applicable Rules and Regulations	
B. Typical Installation Sketches	
C. Types of Backflow Prevention Devices and Methods	
D. List of Authority-Approved Backflow Prevention Devices	
E. Sample Test Report	
F. References	

FOREWORD

In accordance with the Federal Safe Drinking Water Act of 1974, the Pennsylvania Safe Drinking Water Act Sections 109.608 and 109.709(b), requirements of the Pennsylvania Department of Environmental Resources Public Water Supply Manual and the Lehigh County Authority Rules and Regulations for Water Service, the Authority has adopted a policy for protection of its potable water supply system from backflow, through a program of containment.

The Authority, as the water purveyor, has the primary responsibility for preventing water from unapproved sources, or any other substances, from entering the public water supply system. The policy and procedures contained herein recognize that every customer's plumbing system contains connections to fixtures, tanks, pipes, etc. containing or which could contain, substances which could contaminate and/or pollute the customer's and the Authority's potable water system, if not properly controlled. It is the intent of this policy and these procedures to educate and aid the customer in identifying plumbing cross-connections within their facility, and to protect the Authority's system by containing within a customer's premises any water, liquids, mixtures or substances which may enter the customer's potable water system through cross-connections. This policy along with the procedures described hereafter, the applicable codes, rules and regulations adopted by the political subdivisions in which the Authority provides water service, are designed to provide the Authority's system with reasonable protection from contamination and/or pollution as a result of backflow.

These procedures set guidelines for the minimum backflow prevention devices to be utilized in protecting the Authority's system from hazards associated with backflow and/or back-siphoning from a consumer's premises. However, it is the owner's ultimate responsibility to ensure that the appropriate Authority-approved assembly is installed and maintained in order to prevent any pollutant and/or contaminant from flowing from the owner's facility back into the Authority's system. While the Authority has the right to have access to the customer's premises, that right or the exercise of such right shall not diminish the owner's responsibility to install and maintain an approved backflow prevention assembly.

I. DEFINITIONS

The following definitions shall apply:

Air Gap Separation: The unobstructed vertical distance through the free atmosphere between the lowest opening from any pipe or faucet supplying water to a receptacle and the flood level rim of the receptacle. The distance between the opening and the flood rim shall be at least twice the diameter (2 x Dia.) of the supply pipe, and a minimum of 1 inch.

Approved: Accepted by the Authority as meeting the applicable specifications of this policy and procedures manual.

Authority: Lehigh County Authority.

Auxiliary Water Supply: Any water source or system on the premises, available for use by the customer, except connections between the Authority's system and other approved public water supply systems.

Backflow: The reversal in direction of flow from the normal or intended direction of flow whereby water or other liquids, mixtures, or substances can enter into the Authority's system from any unapproved source.

Backflow Prevention Assembly: An assembly or other means installed on the customer's service line to prevent backflow.

Back Pressure: An increase in pressure created within a customer's plumbing system resulting in a greater pressure within the facility than that found at the service connection.

Back-siphonage: The backflow of water or any other substance into the potable water system due to a negative pressure existing either within a facility or the Authority's system.

Certified Tester: A trained person, approved by the Authority to test backflow prevention assemblies required by the Authority.

Containment: A method of backflow prevention that requires a backflow prevention assembly on the customer's service line.

Contaminant: Any substance which, when present in water, tends to degrade the quality of the water so as to create an actual hazard to the public health through poisoning or the spread of disease.

Cross-connection: Any actual or potential connection between the Authority's system and a system containing a source or potential source of contamination or pollution.

Customer: Any person who receives service from the Authority.

Customer's Service Line: The pipe from the customer-side of the curb stop to the meter setting.

Customer's Plumbing~ System: All customer owned piping, fixtures and appurtenances used to transport potable water to, within and from a building including all residential and non-residential facilities.

Degree of Hazard: The evaluation of a customer's facilities to determine their potential risk to health, and the adverse effect upon the Authority's system in the event of backflow.

Double Check Valve Assembly (DCVA): An assembly composed of two single, independently operating, check valves with tightly-closing, resilient-seated shut-off valves at each end of the device and suitable connections for testing of the watertightness of each check valve.

Meter Setting: The location of the meter and components, including shut-off valves and any meter by-pass.

Pollutant: Any substance that when present in water tends to degrade the quality of the water so as to impair the potability of the water, but not to a degree which will create an actual hazard to the public health.

Premises: The property, building or other site to which service is furnished.

Owner: The person in whose name the property is deeded.

Reduced Pressure Zone Assembly (RPZA): An assembly composed of two single, independently operating, check valves, together with an automatically operated, pressure differential relief valve, located between the two check valves. The relief valve shall open to the atmosphere when the pressure differential between the supply pressure and the pressure in the zone between the two check valves is less than 2 (two) pounds. The device shall have a tightly-closing, resilient- seated shutoff valve directly attached to each end and suitable connections for testing of the watertightness of each check valve and the operation of the pressure differential relief valve.

Service: (1) Furnishing or readiness to furnish water for any purpose, including the extinguishments of fires, and/or (2) any installation or improvement or change in the service line or the system facilities, at the customer's request or as required by the Authority, and/or (3) any Authority activities related thereto.

System: The Authority's water supply, transmission and distribution facilities, in whole or in part.

II. STATEMENT OF POLICY

It shall be the policy of the Lehigh County Authority with regard to backflow prevention to: (1) protect its system by containment; (2) educate its customers to the hazards associated with cross-connections and backflow; and (3) aid the owner in identifying, and eliminating or controlling plumbing cross-connections within their facility.

III. RESPONSIBILITIES

A. Lehigh County Authority

1. To review and evaluate, on-site with the aid of the owner, proposed plans of all connections to the Authority's system, in order to determine the appropriate type of backflow prevention assemblies required to contain within the owner's premises any pollutant and/or contaminant which may enter the plumbing system through cross-connections.
2. To conduct periodic cross-connection surveys of all industrial and commercial customers' premises.
3. To notify in writing the owner of premises connected to the Authority's system of any corrective actions required in order to comply with the Authority's backflow prevention policy.
4. To ensure that the Authority's system is not designed or constructed in a manner which creates a cross-connection.
5. To immediately discontinue service to any premises where the Authority becomes aware that a serious threat to public health exists.
6. To discontinue service to any premises where an owner has not complied with the requirements of this policy, as determined by the Authority, within 30 days of being notified in writing of noncompliance.
7. To develop and implement an education program for all customers on the hazards of cross-connections, their control and elimination.
8. To furnish a residential dual check valve to all new residential customers upon their payment of the appropriate fee.
9. To furnish and install a residential dual check valve at the meter setting of existing residential customers.
10. To test, maintain and replace all residential backflow prevention devices required by this policy.

B. Owner

All Premises

1. To eliminate or control all cross-connections on his premises.

Nonresidential Class Premises

1. To install at his expense, any and all backflow prevention assemblies within an Authority specified time period of not less than 90 days which are required under this policy, upon being notified in writing by the Authority.
2. To repair or replace any backflow prevention assembly required under this policy, which is non-functional as determined by Authority-approved test procedures, within 30 days of the failed test date.
3. To have any backflow prevention assembly required under this policy tested within 30 days of the initial installation date, and annually thereafter, at his expense, and to maintain records of all testing and repair of the assemblies on the premises for a period of seven years.
4. To submit to the Authority all test reports and maintenance records within 14 days following the testing, repair, or overhaul of backflow prevention assemblies required under this policy.

C. Certified Tester

1. To have a backflow prevention assembly testing device that is maintained in proper working order.
2. To use only Authority-approved testing procedures when conducting tests on backflow prevention assemblies required by this policy.
3. To record, on forms provided by the Authority, the results of each test conducted on backflow prevention assemblies required by this policy.
4. To submit a copy of the test report to the owner of the backflow prevention assembly within seven days of testing the device.
5. To notify the owner of any device that has failed at the time of testing.

IV. SPECIFICATIONS AND APPROVAL FOR BACKFLOW PREVENTION ASSEMBLIES

All backflow prevention assemblies or air gap separations used in accordance with this policy to protect the Authority's system shall be approved by the Authority prior to installation and shall be in accordance with the strictest standards of the University of Southern California Foundation for Cross-connection Control and Hydraulic Research (USCFCCCHR) and American Society of Sanitary Engineering (ASSE). Backflow prevention assemblies used on private fire protection service lines shall be listed by Underwriters Laboratories (UL) or Factory Mutual System (FM).

All backflow prevention assemblies shall consist of a backflow prevention device located between two tightly closing, resilient-seated shutoff valves, with four properly placed resilient-seated test cocks. Only the following type of assemblies shall be allowed under this policy:

Double Check Valve Assemblies meeting ANSI/AWWA CS 10, having USCFCCCHR approval.

Detector Double Check Assemblies* meeting ANSI/AWWA CS 10, having USCFCCCHR approval, FM** and UL listed**.

Reduced Pressure Zone Assemblies meeting ANSI/AWWA C511, having USCFCCCHR approval.

Reduced Pressure Zone-Detector Assemblies* meeting ANSI/AWWA C51 1, having USCFCCCHR approval, FM** and UL listed**.

Dual Check Valve meeting ASSE 1024.

* By-pass meters used on detector assemblies shall be supplied and installed by the Authority at the owner's expense.

** FM/UL-listed backflow prevention assemblies must include FM-approved OS&Y gate valves.

V. EXISTING BACKFLOW PREVENTION ASSEMBLIES

Any existing backflow prevention assembly installed at the meter setting shall be allowed by the Authority to continue in service so long as the device is found to be operational through periodic testing, unless the degree of hazard is such that the existing backflow prevention assembly is no longer effective or presents an unreasonable risk to public health. Where the degree of hazard has increased, as in the case of a residential use converted to a commercial use, the Authority shall determine the type of required backflow prevention assembly to be installed at the owner's expense within 90 days of a change in use.

VI. AUXILIARY WATER SOURCES

An Authority-approved backflow prevention assembly shall be installed at the service connection to every premises where there exists an auxiliary water supply.

Where the connection is between the Authority's water system and that of another public water supply system, no backflow prevention assembly shall be required, provided that, the other public water supplier has a backflow prevention/cross-connection program.

VII. LOCATION AND INSTALLATION OF BACKFLOW PREVENTION ASSEMBLIES

A. General Conditions

- I. All backflow prevention assemblies must be installed in an USCFCCCHR- or AWWA-approved manner and in conformance with the manufacturer's recommendations.
2. Backflow prevention assemblies shall be located so as to permit easy access and provide an adequate and safe working environment for maintenance, inspection, and testing.
3. The backflow prevention assembly must be protected from freezing, flooding, and mechanical damage.
4. The owner of the backflow prevention assembly must be able to isolate the device during normal business hours to permit testing and maintenance of the device. If, due to service requirements, isolation is not possible, a by-pass line equipped with an Authority-approved backflow prevention assembly must be installed.
5. The backflow prevention assembly must be installed in a horizontal alignment with the bottom of the backflow preventer between 12" to 30" above the floor and a minimum of 18" from any wall unless otherwise approved by the Authority prior to installation of the assembly.
6. Installation of backflow prevention assemblies in pits will only be allowed if no other type of installation is possible, and then only with prior Authority approval. All pits shall be constructed to the following specifications:
 - a. the pit interior shall be sized to provide a minimum separation of 18" between all piping and pit walls, and a minimum of 6 1/2 feet high;
 - b. the pit must be water tight;

- c. the pit opening and cover must be a minimum of 36" X 36" with a Bilco door or approved equal;
- d. the foothold inserts must be of steel or aluminum, must be a maximum of 12 inches apart, and must be installed so that the top foothold is within 12 inches of the pit opening and the bottom foothold is within 12 inches of the pit floor;
- e. a drain or automatic sump pump must be installed, and the drain line shall not be connected to a sewer;
- f. the pit must have adequate natural or electric lighting for testing, maintenance, and inspection of the assembly.

B. Domestic Service Lines

1. All backflow prevention assemblies on domestic service lines shall be installed immediately downstream of the water meter and before any connection to the service line. All connections to the service line upstream of the assembly, shall be permanently disconnected, or an Authority approved backflow prevention assembly shall be installed on the connection line.
2. In the event the Authority recommends that the backflow prevention assembly not be installed at the meter setting, as in the case of a Reduced Pressure Zone Device in a pit, the backflow prevention assembly shall be placed either in an aboveground, frost-proof shelter or installed immediately downstream from the point where the water service line enters a building. Any connections upstream of this point shall either be permanently removed or, where the connection is allowed to remain, an Authority-approved backflow prevention assembly shall be installed.

C. Private Fire Protection Service Lines

1. All devices on private fire protection service lines shall be installed before any connections or pumps.

VIII. THERMAL EXPANSION

When heated water is contained in the customer's facility as a result of a main line backflow prevention assembly being installed, special consideration should be made by the customer or his plumber with regard to thermal expansion. An auxiliary relief valve, expansion tank or other means of providing for thermal expansion should be installed on the internal plumbing system of the customer's facility to prevent damage to the customer's hot water heater and/or plumbing system.

IX. TYPES OF BACKFLOW PREVENTION DEVICES REQUIRED

Table 1 shall serve as a guide and partial listing for the type of backflow prevention assemblies required by the Authority, based on the degree of hazard associated with a given type of facility or its uses.

TABLE 1

The following shall require an **Air Gap (AG) Separation** or **Reduced Pressure Zone Assembly (RPZA)**:

1. Sewage Treatment Plants, Sewage Pump Stations, Sewage Ejectors
2. Irrigation Systems, Greenhouses
3. Plating Facilities
4. Hospitals, Mortuaries, Clinics
5. Photo-processing Lab.
6. Boiler Systems
7. Car Washes
8. Food Processing, Breweries
9. Printing Plants
10. Chemical-manufacturing Plants
11. Cooling Tower Recirculating Systems
12. Any systems connected to chemical agents, anti-freeze, or auxiliary water supplies
13. Heat Exchangers
14. Solar Energy Systems
15. Private Fire Protection Systems with hose connections within 1200 feet of an auxiliary water source.
16. Submerged inlets

17. Laboratories
18. Commercial Laundries
19. Premises with restricted inspection

The following shall require a minimum of a **Double Check Valve Assembly (DCVA)**:

1. Public Swimming Pools without submerged inlets
2. Private Fire Protection Systems without additives, booster pumps or auxiliary sources.
3. Restaurants
4. Commercial Buildings
5. Apartment Buildings
6. Supermarkets
7. Office Buildings
8. Barber Shops, Hairdressers

The following shall require a minimum of a Dual Check Valve (DCV)

1. Residential premises

APPENDIX A

A. THE PENNSYLVANIA SAFE DRINKING WATER ACT

109.608. CROSS-CONNECTIONS

A public water system shall not be designed or constructed in a manner which creates a cross-connection.

109.709. CROSS-CONNECTION CONTROL PROGRAM

- (a) No person shall introduce contaminants into a public water supply through a service connection of a public water system.
 - (1) It shall be the responsibility of the customer to eliminate cross-connections or provide backflow devices to prevent contamination of the distribution system from both backsiphonage and backpressure. Individual backflow preventers shall be acceptable to the water supplier.
 - (2) If the customer fails to comply with paragraph (1) within a reasonable period of time, the water supplier shall discontinue service after reasonable notice has been made to the customer.
- (b) At the direction of the Department, the public water supplier shall develop and implement a comprehensive control program for the elimination of existing cross-connections or the effective containment of sources of contamination, and prevention of future cross-connections. A description of the program, including the following information, shall be submitted to the Department for approval:
 - (1) A description of the methods and procedures to be used.
 - (2) An implementation schedule for the program.
 - (3) Legal authority for implementation of the program, such as, by ordinance or rules.
 - (4) A time schedule for inspection of nonresidential customers' premises for cross-connections with appropriate record keeping.
 - (5) A public education program for residential customers.
 - (6) A description of the methods and devices which will be used to protect the water system.

- (7) A program for the review of plans for new users to assure that no new cross-connections are developed.
- (8) Provisions for the discontinuance of water service, after reasonable notice, to premises where cross-connections exist.

B. LEHIGH COUNTY AUTHORITY - RULES AND REGULATIONS FOR WATER SERVICE

1. CONDITIONS OF SERVICE

- a. **Cross-Connections**: No cross-connections will be permitted.
- b. **Backflow Prevention**: A backflow prevention assembly shall be installed on all service lines.

2. BACKFLOW PREVENTION

All installations, maintenance and operation shall be in accordance with the Authority Backflow Prevention Policy.

- a. **Cost and Ownership**: All new and existing non-residential customers shall install a backflow prevention assembly approved by the Authority. The cost of furnishing and installation of the assembly shall be the customer's responsibility. The customer shall retain ownership of the assembly.

All new residential customers shall install a backflow prevention assembly, which will be supplied by the Authority. The device will be installed directly after the meter and in a configuration specified and approved by the Authority. The device will remain the property of the Authority.

All existing residential customers shall have a backflow prevention assembly installed and supplied by the Authority, on a schedule to be determined by the Authority and at no cost to the customer. The device will remain the property of the Authority.

- b. **Normal Maintenance and Testing**: Non-residential customers will be responsible for periodic testing and maintenance of the devices as required by the Authority.

The Authority will be responsible for periodic testing and maintenance of the residential devices.



LCA APPROVED BACKFLOW TESTERS

as of 7/13/2011

NOTE: If a tierist has an expired certification card on file with us they are responsible for providing us with an updated card when available

Inspectors with licenses expiring before October 5, 2011 are highlighted. Please ensure that these tierists have renewed their certification before they perform your test.

1	COMMONWEALTH FIRE PROTECTION PO BOX 351 LEOLA, PA 17540		Phone #: 508-893-7979	Fax #: 508-893-9898
	Approved Tester(s):	41,202 CRAYNE, HUGH	License # 8073	Expires: 08/31/2012
		41,917 MORAVEK, JOSEPH	License # 9289	Expires: 07/31/2013
2	4-J HOME WATER COMPANY PO BOX 26034 COLLEGEVILLE, PA 19426		Phone #: 610-935-5504	Fax #:
	Approved Tester(s):	39,318 FABRIZIO, JAMES	License # 2225	Expires: 05/31/2013
3	ABC AUTOMATIC SPRINKLER COMPANY 1735 OWL CREEK ROAD LEHIGHTON, PA 18235		Phone #: 610-377-4100	Fax #:
	Approved Tester(s):	39,303 ANDREWS, CHAD	License # 6850	Expires: 12/31/2012
4	ADVANCED SPRINKLER TECHNOLOGY INC 1247 EASTON ROAD WARRINGTON, PA 18976		Phone #: 215-491-0222	Fax #: 215-491-0969
	Approved Tester(s):	40,025 PASTORE, JESSE S.	License # 8720	Expires: 08/31/2011
5	AFFORDABLE FIRE PROTECTION 540 HAMILTON AVENUE LINWOOD, NJ 08221		Phone #: 609-927-9220	Fax #:
	Approved Tester(s):	39,371 ZISTL, ERIC	License # 8256	Expires: 02/28/2013
6	AMC FIRE PROTECTION PO BOX 640 MOORESTOWN, NJ 08057		Phone #: 877-781-7878	Fax #:
	Approved Tester(s):	39,337 KLAUDER, THOMAS	License # 11957	Expires: 04/30/2012
		39,694 MOORE, GEORGE	License # 7065	Expires: 07/31/2012
7	ANCHOR FIRE PROTECTION 270 RENNINGER ROAD PERKIOMEN, PA 18074		Phone #: 610-754-7836	Fax #:
	Approved Tester(s):	39,310 BUSH, JASON	License # 7694	Expires: 05/31/2014
8	BURKHARDT MECHANICAL 2700 OLD PRICETOWN ROAD TEMPLE, PA 19560		Phone #: 610-921-0234	Fax #:
	Approved Tester(s):	39,364 SPOHN, CHAD	License # 5755	Expires: 10/31/2011
9	CARPINET PLUMBING AND HEATING INC 75 E 8TH STREET WYOMING, PA 18644		Phone #: 570-693-1840	Fax #:
	Approved Tester(s):	39,312 CARPINET, ROBERT	License # 1909	Expires: 05/31/2013
10	CHARLES WILSON 41 DEER PATH DRIVE CHURCHVILLE, PA 18966		Phone #: 215-397-7393	Fax #: 215-322-2644
	Approved Tester(s):	41,290 S.C. WITTY PLUMBING AND HEATING	License # 10489	Expires: 04/30/2013
11	COMMONWEALTH FIRE PROTECTION CO 2749 CREEK HILL ROAD PO BOX 351 LEOLA, PA 17540		Phone #: 717-656-2981	Fax #:
	Approved Tester(s):	39,314 COLE, STEVEN	License # 8072	Expires: 08/31/2012
12	COMUNALE FIRE PROTECTION CONTRACTORS 99 NORTH BROAD STREET PHILLIPSBURG, NJ 08865		Phone #: 908-454-6323	Fax #:
	Approved Tester(s):	40,918 GOTTSBALL, ERIC	License # 6963	Expires: 08/31/2013
13	D S CORRELL CO INC 237 HOFFMAN ROAD WIND GAP, PA 18091		Phone #: 610-759-8375	Fax #:
	Approved Tester(s):	39,346 NESFEDER, DALE	License # 8405	Expires: 10/31/2013
14	DENNIS FLOOD PO BOX 352 LINCOLN PARK, NJ 07035		Phone #: 973-713-7116	Fax #: 973-628-1597
	Approved Tester(s):	41,291 TRI-STATE WATER MAIN TAPS, LLC	License # 10272	Expires: 11/30/2012
15	EAST PENN SCHOOL DISTRICT 800 PINE STREET EMMAUS, PA 18049		Phone #: 610-966-8375	Fax #:
	Approved Tester(s):	39,357 SCHEIRY, MICHAEL	License # 10167	Expires: 07/21/2012
16	ELITE 4020 WEST CHESTER PIKE NEWTOWN SQUARE, PA 19073		Phone #: 610-637-6523	Fax #:
	Approved Tester(s):	39,321 GENTILE, FRANK	License # 8441	Expires: 10/31/2013
17	FIRE PROTECTION INDUSTRIES, INC. 2130 PENN AVENUE WEST LAWN, PA 19609		Phone #: 610-939-8362	Fax #:
	Approved Tester(s):	39,309 BRUNNER, ROBERT	License # 13414	Expires: 05/31/2013
		39,518 SOPHY, ROBERT	License # 10170	Expires: 07/31/2012
18	FIRE SYSTEMS INC 888 N MAPLE STREET EPHRATA, PA 17522		Phone #: 717-733-2710	Fax #:
	Approved Tester(s):	39,348 PERRY, C. THOMAS	License # 5080	Expires: 06/30/2012
19	GEORGE MERTZ PO BOX 340 TREXLERTOWN, PA 18087		Phone #: 484-824-2545	Fax #:
	Approved Tester(s):	39,345 MERTZ III, GEORGE	License # 3123	Expires: 02/28/2014
20	H T LYONS 7165 AMBASSADOR DRIVE ALLENTOWN, PA 18106		Phone #: 610-530-2600	Fax #:
	Approved Tester(s):	39,317 EDLING, HAROLD	License # 6855	Expires: 12/31/2011
		39,338 LANGKAMER, MARK	License # 5752	Expires: 10/31/2011
		39,358 SCHMICK, ANDREW	License # 7237	Expires: 02/28/2013
21	JOHN KOWALSKI 154 FRANKLIN STREET WEST READING, PA 19611		Phone #:	Fax #:
	Approved Tester(s):	41,289 S&L MECHANICAL INC	License # 17004	Expires: 04/03/2012
22	KEYSTONE FIRE PROTECTION 108 PARK DRIVE STE 3 MONTGOMERYVILLE, PA 18936		Phone #: 215-641-0100	Fax #:
	Approved Tester(s):	39,320 GAWSOUSKY, BRETT	License # 9164	Expires: 02/28/2013
		39,363 SOUZA, DANIEL	License # 7564	Expires: 12/31/2013
23	KEYSTONE FIRE PROTECTION CO 433 INDUSTRIAL DRIVE NORTH WALES, PA 19454		Phone #: 215-641-0100	Fax #:
	Approved Tester(s):	40,063 FERTAL, R. MICHAEL	License # 6011	Expires: 10/31/2013

24	KISTLER O'BRIEN FIRE PROTECTION		Phone #: 610-266-7100		Fax #:	
	2210 CITY LINE ROAD BETHLEHEM, PA 18017					
	Approved Tester(s):	39,306	BERGSTRESSER, RANDY	License #	7864	Expires: 12/31/2011
		39,308	BRUNNER, JOHN	License #	9028	Expires: 09/30/2012
		39,311	CARL, JOHNATHAN	License #	9756	Expires: 07/31/2011
		39,460	CRAWFORD, RYAN	License #	10152	Expires: 07/31/2012
		39,459	DECKER, RAY	License #	10153	Expires: 07/31/2012
		39,332	HOLZINGER, JAMES	License #	8713	Expires: 08/31/2011
		39,461	HUJSA, DAVID	License #	10161	Expires: 07/31/2012
		39,359	SCHMOYER, SCOTT	License #	9356	Expires: 09/30/2013
		39,370	WILLIAMS, BRYAN	License #	9757	Expires: 07/31/2011
25	LIBERTY PROPERTY TRUST		Phone #: 610-867-9100		Fax #:	
	1510 VALLEY CENTER PARKWAY STE 240 BETHLEHEM, PA 18017					
	Approved Tester(s):	39,329	HEIST, DALE	License #	8400	Expires: 10/31/2013
26	MARCO INC.		Phone #: 610-363-2233		Fax #:	
	320 COMMERCE DRIVE EXTON, PA 19341					
	Approved Tester(s):	39,325	GROSSMAN, ADAM	License #	8817	Expires: 12/31/2011
		39,693	NORTSTOM, KURT	License #	7145	Expires: 10/31/2012
		39,692	SERBIN, THOMAS	License #	8199	Expires: 12/31/2012
		39,691	THOMAS, JOSHUA	License #	7147	Expires: 10/31/2012
27	MIKE GILLETTE PLUMBING		Phone #: 610-799-5455		Fax #:	
	5050 PINE STREET SCHNECKSVILLE, PA 18078					
	Approved Tester(s):	39,322	GILLETTE, MICHAEL	License #	3118	Expires: 02/28/2014
28	PENN FIRE PROTECTION INC		Phone #: 570-374-4508		Fax #:	
	1768 ROUTE 522 PO BOX 146 SELINGSGROVE, PA 17870					
	Approved Tester(s):	39,328	HAYES, MARK	License #	16692	Expires: 02/28/2012
		39,343	MEASE, RICHARD	License #	16689	Expires: 02/28/2012
29	PRECISION FIRE PROTECTION		Phone #: 717-484-2642		Fax #:	
	PO BOX 6034 WYOMISSING, PA 19610					
	Approved Tester(s):	39,307	BERRY, TOM	License #	3309	Expires: 11/30/2012
		39,327	HASSLER, WAYNE	License #	3803	Expires: 09/30/2012
30	S & L MECHANICAL		Phone #: 610-374-1615		Fax #:	
	154 FRANKLIN STREET WEST READING, PA 19611					
	Approved Tester(s):	39,340	LYNAM, THOMAS	License #	10762	Expires: 03/31/2012
31	S A COMUNALE CO INC		Phone #: 856-848-4666		Fax #: 856-848-1175	
	803 RYAN AVENUE WESTVILLE, NJ 08093					
	Approved Tester(s):	39,764	GILLEN, MIKE	License #	9165	Expires: 02/28/2013
		39,349	PETERS, GREGORY	License #	7786	Expires: 07/31/2011
		39,354	SALGADO, HECTOR	License #	8933	Expires: 05/31/2012
		39,369	WARNER, JEFFREY	License #	8363	Expires: 08/31/2013
32	S AGENTIS/MR. ROOTER PLUMBING		Phone #: 610-867-6001		Fax #:	
	2678 BUTZTOWN ROAD BETHLEHEM, PA 18017					
	Approved Tester(s):	39,361	SMITH, JAMES JR.	License #	7284	Expires: 04/30/2013
33	S&L MECHANICAL INC.		Phone #: 610-374-1615		Fax #:	
	154 FRANKLIN STREET WEST READING, PA 19611					
	Approved Tester(s):	39,527	BOYER, CRAIG M.	License #	17006	Expires: 04/30/2012
34	SIMPLEX GRINNELL LP		Phone #: 610-398-7260		Fax #:	
	6330 HEDGEWOOD DRIVE STE 250 ALLENTOWN, PA 18106					
	Approved Tester(s):	39,245	ALLOGGIO, JONATHAN	License #	9977	Expires: 02/28/2012
		39,305	BECKER, CHRISTOPHER	License #	8938	Expires: 05/31/2012
		39,323	GONZALES, KEITH	License #	7757	Expires: 06/30/2011
		39,334	HUCKS, MICHAEL	License #	8983	Expires: 06/30/2012
		39,339	LONDON, BRIAN	License #	4336	Expires: 07/31/2013
		39,341	MARINER, CHRIS	License #	10013	Expires: 03/31/2012
35	THOMAS SCHAEFFER PLUMBING		Phone #: 610-705-5798		Fax #:	
	2357 HARVEST LANE GILBERTSVILLE, PA 19525					
	Approved Tester(s):	39,356	SCHAEFFER, THOMAS	License #	4526	Expires: 10/31/2013
36	VICTORY FIRE PROTECTION		Phone #: 610-327-0300		Fax #:	
	320 CIRCLE OF PROGRESS SUITE 108 POTTSTOWN, PA 19464					
	Approved Tester(s):	39,353	RICCI III, VINCENT	License #	7236	Expires: 02/28/2013
37	WAYMAN FIRE PROTECTION INC.		Phone #: 302-994-5757		Fax #:	
	403 MECO DRIVE WILMINGTON, DE 19804					
	Approved Tester(s):	40,022	MYERS, DAN	License #	8126	Expires: 10/31/2012
38	WILLIAM ELEK LTD		Phone #: 610-432-7001		Fax #:	
	1101 AIRPORT ROAD ALLENTOWN, PA 18109					
	Approved Tester(s):	39,457	SHELAK, JUSTIN	License #	10169	Expires: 07/31/2012
39	WORTH AND COMPANY, INC.		Phone #: 267-362-1100		Fax #: 267-362-1130	
	6263 KELLERS CHURCH ROAD PIPERSVILLE, PA 18947					
	Approved Tester(s):	40,838	SCHIFFGENS, JOE	License #	7701	Expires: 04/30/2013
40	YOUNG PLUMBING & HEATING INC		Phone #: 610-867-5682		Fax #:	
	60 EAST UNION BOULEVARD BETHLEHEM, PA 18018					
	Approved Tester(s):	39,335	HUGHES JR., RICHARD	License #	9760	Expires: 07/31/2011